

CLAIMS

1. A folder type mobile radio apparatus comprising:

5 a first antenna element provided in a first casing;

a second casing pivotably connected to the first casing through a hinge portion;

10 a circuit board having a ground pattern provided in an end side, which is near the hinge portion, of the second casing;

a second antenna element provided in another end side, which is opposite to the hinge portion, of the second casing;

15 a first feed means for feeding the first antenna element from a radio circuit on the circuit board;

a second feed means for feeding the second antenna element from the radio circuit on the circuit board;
and

20 a switching means for selecting one of the first feed means and the second feed means,

wherein the first antenna element and the ground pattern on the circuit board operate as a dipole antenna when the first feed means is selected, and

25 wherein the second antenna element and the ground pattern on the circuit board operate as a dipole antenna when the second feed means is selected.

2. The folder type mobile radio apparatus
according to claim 1,

wherein the ground pattern on the circuit board is
5 disposed in a hinge portion side of the second casing
with substantially a half area of the second casing,

wherein the second antenna element is disposed in
an opposite side from the hinge portion of the second
casing with substantially a half area of the second
10 casing, and

wherein the second antenna element is spaced from
the ground pattern on the circuit board with a
predetermined interval, and electrically connected to
the second feed means on the circuit board.

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3. The folder type mobile radio apparatus
according to claim 1 or 2,

wherein the hinge portion includes a first hinge
portion and a second hinge portion comprising
20 conductive metal, and a connecting portion for
electrically connecting and pivotably supporting the
first hinge portion and the second hinge portion,

wherein the first hinge portion is provided in the
first casing, and electrically connected to an end of
25 the first antenna element,

wherein the second hinge portion is provided in
the second casing, spaced from the ground pattern on

the circuit board with a predetermined interval, and electrically connected to the first feed means on the circuit board, and

wherein the first antenna element, the hinge
5 portion, and the ground pattern on the circuit board operate as a dipole antenna when the first feed means is selected.

4. The folder type mobile radio apparatus
10 according to claim 1, 2, or 3, wherein the second antenna element comprises a copper foil pattern on the circuit board.

5. The folder type mobile radio apparatus
15 according to claim 1, 2, 3, or 4,

wherein, in the second casing, an inductance element is inserted into a circuit for connecting an electronic circuit provided in a circuit board side to an electronic circuit provided in a second antenna
20 element side, and

wherein the inductance element is arranged in an interval between the ground pattern on the circuit board and the second antenna.

25 6. The folder type mobile radio apparatus according to claim 1, 2, 3, 4, or 5, further comprising a folding/unfolding detection means for detecting a

folded/unfolded condition of the first casing and the second casing,

wherein the switching means is controlled based on a detection result from the folding/unfolding detection means,

wherein the first feed means is selected when the first casing and the second casing are unfolded, and

wherein the second feed means is selected when the first casing and the second casing are folded.

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7. The folder type mobile radio apparatus according to claim 1, 2, 3, 4, or 5, further comprising a holding position detection means for detecting a positional relation between the second casing and a user's hand holding the mobile radio apparatus,

wherein the switching means is controlled based on a detection result from the holding position detection means,

wherein the first feed means is selected when the second antenna element side is held by a hand, and

wherein the second feed means is selected when the hinge portion side is held by a hand.

8. The folder type mobile radio apparatus according to claim 7, further comprising a folding/unfolding detection means for detecting a folded/unfolded condition of the first casing and the

second casing,

wherein the switching means is controlled based on a detection result from the folding/unfolding detection means, and

5 wherein one of the first feed means and the second feed means is forcibly selected when the first casing and the second casing are folded.

9. The folder type mobile radio apparatus
10 according to claim 7 or 8, further comprising one of an optical sensor, a temperature sensor, or an electrostatic sensor as the holding position detection means.

15 10. The folder type mobile radio apparatus according to claim 1, 2, 3, 4, or 5, wherein a feed means having higher transmission quality is always selected by comparing transmission quality of the radio circuit as a method of controlling the switching means.

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11. The folder type mobile radio apparatus according to claim 10, wherein a feed means having a higher received electric field intensity is always selected by comparing a received electric field
25 intensity of the radio circuit.

12. The folder type mobile radio apparatus

according to claim 1, 2, 3, 4, or 5, further comprising
a means for dividing electric power to feed the first
feed means and the second feed means.